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(54) DISK DEVICE

(57)Abstract:

PURPOSE: To reduce the access time to target data during a data reading and to prevent a loss of the data by distributively writing same data on plural and a same track.

CONSTITUTION: A controller 40 controls a driving means 2 and a moving means 3 so as to control plural writings of same data on a same track of a disk 1. On an actual disk, data column 30 are written into three data column 31 (data A1, B1 and C1), data column 32 (data A2, B2 and C2) and data column 33 (data A3, B3 and C3), respectively. Therefore, when these data are read, data are quickly discovered, compared with the case of a monotonous writing and an initial access time is reduced. Moreover, even though a portion of the track is broken, a reading is performed from the portion where there exists no breakage thus, the reliability is improved.

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CLAIMS

[Claim(s)]

[Claim 1] The disk unit carry out having a means make the same data which inputted to the truck of a schedule specified on a disk by rotation of the disk by the driving means which carries out the rotation drive of the disk, record means record information on a disk, the migration means, to which said record means moves, and said driving means, and migration of the record means by said migration means distribute and record on a different location as the description.

DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Industrial Application] This inventions are disk units (a magnetic disk drive, optical-magnetic disc equipment, etc.) mainly used as external storage of a computer, and relate to the disk unit which shortens record and the access time of data, and prevents the loss accompanying breakage of data.

[0002]

[Description of the Prior Art] The example of a configuration in the case of writing data in the conventional disk unit is shown in drawing 3 .

[0003] One is a disk which writes in data in drawing 3 , and 2 is a motor which carries out the rotation drive of the disk 1. 10 of the slash section expresses the truck with which data are written in the actual condition on a disk. 20 is a head for writing data on the truck on a disk, and a head is a lot in this example.

[0004] 3 is a motor to which a head 20 is moved.

[0005] The part 30 surrounding Data A, B, and C is the data stream which should be written in on a disk. Controller 40A has the role which controls the writing to an actual disk. The arrow head shows the data flow in that case.

[0006] With conventional equipment, as shown in drawing 3 , in the writing by the single head, it was writing in one data at a time on the truck of a disk in order.

[0007] Moreover, the example in the case of using two or more heads 21 and 22 is shown in drawing 4 .

[0008] interleaving the data 30 with which controller 40B was given in drawing 4 etc. -- dividing -- each head -- the writing of the separate data streams 34 and 35 was performed to the truck of a disk.

[0009]

[Problem(s) to be Solved by the Invention] However, by the above approaches of writing in, since only the data of a lot were written in on one truck, the inclination

for the time amount for accessing first to become long was in the target data on the occasion of data read-out.

[0010] Moreover, since only the data of a lot existed, when the data was damaged, it might lose and data had led to the fall of dependability.

[0011] It is in offering the data write-in method which this invention is made in view of the above troubles, and the place made into the purpose shortens time amount for accessing the target data first in the case of data read-out, and leads to improvement in the dependability of data.

[0012]

[Means for Solving the Problem] The configuration have the means which distributes in this invention to the location which is different in the same data which inputted to the truck of a schedule specified on a disk by rotation of the disk by the driving means which carries out the rotation drive of the disk, record means record information on a disk, the migration means, to which said record means moves, and said driving means, and migration of the record means by said migration means, and makes record in order it attains the above-mentioned purpose adopted. That is, one or more heads used for the writing of the data to a disk and the driving gear of those were provided, and those heads distribute on the same truck of the same disk, and wrote in two or more same data.

[0013]

[Function] Since it decided to distribute and write in two or more same data on the same truck in this invention in the case of the writing to the disk of data, in case the data stored on the disk are read, time amount until it reaches the head from which the target data read is shortened, and in case it is data read-out, it becomes possible to shorten time amount for accessing the target data first. Moreover, since loss of data can be avoided by using other duplicate data even when the data which are of them when two or more same data exist on the same disk are damaged, it becomes possible to aim at improvement in dependability.

[0014]

[Example] Hereafter, the suitable example of this invention is explained to a detail with reference to an accompanying drawing.

[0015] Drawing 1 is the example 1 concerning this invention, and shows the writing of the data in a disk. One is a disk which writes in data in drawing 1 , and 2 is a motor which carries out the rotation drive of the disk 1. 10 of the slash section expresses the truck with which data are written in the actual condition on a disk. 20 is a head for writing data on the truck on a disk, and a head is a lot in this example.

[0016] 3 is a motor to which a head 20 is moved.

[0017] 30 is the data stream which should be written in on a disk, and the contents of the data stream 30 are expressed by Data A, B, and C. A controller

40 has the role which controls the writing to an actual disk. In this example, the controller 40 is controlling two or more writing of a up to [the same truck of the same data], and on an actual disk, a data stream 30 is reproduced by 32 (data A2, B-2, C2) and 33 (data A3, B3, C3), respectively, and is written in with three data streams 31 (data A1, B1, and C1).

[0018] In addition, the arrow head shows the data flow in that case. When reading the data on this truck next, compared with the case of single writing, discovery of data is early performed by two or more of these writing, and compaction of the first access time which occupies a part with the big engine performance of a disk can be aimed at.

[0019] Moreover, since the same data are distributed and written on the same truck, even if the writing of the part on a truck is damaged, it becomes possible to be able to obtain data quickly and to contribute also to improvement in dependability by read-out from the location which has not been damaged on the truck.

[0020] Drawing 2 shows the write-in example of the data of an example 2. In this example, the disk unit possesses the headers 21 and 22 for R/W of the data of plurality (in the case of this drawing, it is two). To each of two or more of these headers 21 and 22, a controller 40 reproduces and distributes one data stream 30 (data streams 31 and 32), and is writing in on the same truck 10 of a disk 1.

By doing in this way, it becomes possible to perform processing which distributes the same data and are written in on the same truck on the same disk at a high speed.

[0021] Furthermore, if the configuration shown in drawing 2 is developed and is expanded, when writing in data with two or more heads, it is also possible to also write in two or more data which are different in coincidence by making into a group the header which writes in the same data, and preparing two or more sets of the group, respectively, and to become possible and to attain improvement in the speed of writing.

[0022]

[Effect of the Invention] Since it performs distributing and writing in two or more same data on the same truck on the same disk according to this invention in case data are written in a disk so that clearly from the above explanation Time amount in case the data stored on the disk are read, until it reaches the head from which the target data read is shortened, and in case it is data read-out, there is effectiveness which shortens time amount for accessing the target data first.

[0023] Moreover, when two or more same data exist on the same disk, even when a certain data of them are damaged, loss of data can be avoided by using other duplicate data, and there is effectiveness which leads to improvement in

dependability.

DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] It is the block diagram showing the data writing of the example 1 concerning this invention.

[Drawing 2] It is the example 2 concerning this invention, and is the block diagram showing the data writing by two or more headers.

[Drawing 3] It is the block diagram showing an example of the data writing in the conventional disk unit.

[Drawing 4] In a disk unit with two or more conventional headers, it is the block diagram showing an example of data writing.

[Description of Notations]

1 Recording Surface of Disk

10 Truck on Disk

20, 21, 22 Header for writing in data

30 Data Stream

40 Controller

31, 32, 33 Reproduced data stream